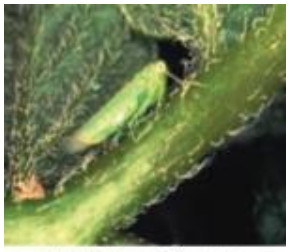
Leafhopper, Potato



opper, Potato , *Empoasca fabae*, adult. piecing mouthparts.

(https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/images/leafhopper_potato.jpg)

(https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/images/leafhoppernymph.jpg)

(https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/images/hopperburnbeanparadisehill07.jpg)

(https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/images/hopperburn_potato.jpg)

Empoasca fabae

Identification and Life Cycle:

Potato leahoppers overwinter in the Gulf Coast states and move north in spring, arriving in New England around from early to mid-June. It is easy to overlook them in the crop, as they are small and well hidden. Adults are about 1/4 inch long, light yellow-green, and fly up from foliage when it is disturbed or shaken. Eggs are inserted into veins and petioles of leaves and hatch, on average, in about 10 days. Nymphs usally feed on the underside of leaves, and are bright green, wedge-shaped and very fast-moving. They tend to move sidewise, crab-like, on the leaf surface. Presence of nymphs indicates an established population. Two or more generations may occur after after adults arrive, until killed by frost. Note that aster leafhopper adults are a more drab olive green in contrast to the light green of potato leafhopper adults.

Crop Injury:

Potato leafhopper is primarily a pest of potatoes and snap or dry beans, but also can affect eggplant and other vegetables, raspberries, apple and other fruits as well as field crops including alfalfa, cowpea, soybean and red clover. Legumes are a favored host. Weeds that support leafhoppers include smartweed, pigweed, shepardspurse, and carpetweed. Adults and nymphs feed by inserting a needle-like beak into the plant and feeding on phloem or mesophyll tissue. Athough they are not known to transmit plant pathogens, PLH inject a toxin into the plant. Plant resiration is increased, photosynthesis is decreased, and the conductive tissues the move the products of photosynthesis to other parts of the plant are disrupted by leafhopper feeding. In potato, leaf veins turn yellow, leaves curl, then leaf margins turn brown and brittle, followed by death of entire leaves. In beans the leaf turns mottled brown and curled, as if infected with a disease, before dying completely. Both adults and nymphs cause damage. Plant injury and yield loss can be significant. In potato, yield loss occurs even before the development of obvious symptoms. Green beans are very susceptible, especially when they are infested prior to flowering.

Monitoring & Thresholds:

Because low numbers of adults or nymphs cause injury and reduce yield, it is important to protect plants before adult numbers are high and before nymphs build up. Left uncontrolled, potato leafhopper will continue to build up. It is difficult to count adults since they fly quickly when foliage is shaken or disturbed. Sweep nets can be used to detect adults – treat if more than 1 adult is found per sweep. If you see one adult per plant fly upwhen you shake the foliage, a damaging infestation level is present. Once nymphs develop, they can be monitored by visually inspecting lower leaf surfaces on lower leaves. Treat potato if more

than 15 nymphs are found per 50 compound leaves. In green beans, thresholds are 0.5 per sweep or 2/ft of row at the seedling stage, and 1/sweep or 5/ft of row from 3rd trifoliate leaf to bud stage. Use a threshold of 1.5 leafhopper per leaf in eggplant.

Cultural Controls:

- Early-season and red varieties of potato tend to suffer more damage than long-season varieties; varieties that are less susceptible include Katahdin, Russet Burbank, Russet Norkota, Ontario, and Red la Soda.
- Row cover can be used to delay infestation in snap beans until flowering, when plants are less susceptible to damage. Using row cover is recommended on young eggplant, as it protects from flea beetles, Colorado potato beetle and potato leafhopper.

Chemical Controls & Pesticides:

In potato, some materials registered for Colorado potato beetle adults will also control leafhopper, including neonicotinoids. Other carbamate, synthetic pyrethroid and organophosphate products are also registered. Often a single application is sufficient. Refer to the New England Vegetable Management Guide (https://nevegetable.org/crops/insect-control-18) for recommended materials in potato. Refer to the bean section (https://nevegetable.org/crops/insect-control-1) for recommended materials to control PLH in dry, lima or snap beans. In beans, systemic seed treatment may provide control.

For organic potato growers, pyrethrin (PyGanic EC5.0) has been shown to be relatively effective in reducing leafhopper numbers, especially nymphs. Good coverage is important. The residual period is short. Spraying late in the day or in the evening may provide better control than spraying early in the morning.

Resources include: *Vegetable Insect Management* by Rick Foster and Brian. R. Flood, 2005; *Handbook of Vegetable Pests* by John L. Capinera, 2001.

Crops that are affected by this insect:

- Beans, Snap, Dry, and Lima (/vegetable/fact-sheets/beans-snap-dry-lima)
- Eggplant (/vegetable/fact-sheets/eggplant)
- Potato (/vegetable/fact-sheets/potato)

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